

# Impact of the COVID-19 Lockdown on the Epidemiologic and Clinic Profiles of Domestic Accidents in Children

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## Abstract

**Background:** Domestic accident (DA) is any harmful accidental event that occurs suddenly in the home or its immediate surroundings. Our study aims to describe the impact of the COVID-19 lockdown in the epidemiological and clinical profiles of DAs in children and their management. **Materials and Methods:** This was a mixed descriptive study, comparing DAs occurring during the COVID-19 lockdown and the same period of the previous year. We exhaustively included all children aged from 0 to 15 years admitted for DAs. **Results:** The incidence of DAs remains above 50% in both groups. The average age was 7 years and boys were more affected. Before the COVID-19 lockdown, the most common mechanism encountered was accidents on the public highway 20.75%, while during the lockdown, it was represented by falls from a high place with a height of 2 m or more. During the lockdown, 33.86% of patients consulted after more than 24 h of the trauma. Supracondylar fractures and burns remained the most frequent. In all cases, the cumulative frequency of fractures decreased during the lockdown. The COVID-19 lockdown had no impact on patient's management. **Conclusion:** The COVID-19 lockdown has negatively increased the consultation delay. However, it has considerably reduced the incidence of fractures.

**Keywords:** Child, COVID-19, domestic accident, epidemiology, lockdown

## INTRODUCTION

On 12 March 2020, the WHO declared COVID-19 disease as a pandemic.<sup>[1]</sup> Countries have imposed restrictions on themselves to prevent the spread of COVID-19. Morocco, through the Ministry of health, has decreed the lockdown period from 20<sup>th</sup> March 2020 to 10 July 2020. It implies the closure of schools and parks.<sup>[2]</sup> Keeping children at home without any possibility of exit increases the risk of domestic accidents (DAs).<sup>[3]</sup> A DA is any harmful accidental event that occurs suddenly in the home or its immediate surroundings. They are a public health problem in both developed and developing countries.<sup>[4]</sup>

Our study aims to describe the impact of the COVID-19 lockdown on the epidemiological and clinical profiles of DAs in children and their management.

## MATERIALS AND METHODS

It was a mixed prospective and retrospective, descriptive study.

The prospective part (during lockdown) concerns DAs admitted during the lockdown period from 20 March 2020 to 10 July 2020.

The retrospective part (before lockdown) concerns DAs admitted during the same period of the previous year, from 20 March 2019 to 10 July 2019.

We exhaustively included all children aged between 0 and 15 years old admitted for DAs during these periods. We have not included minor traumas that did not require hospitalization, those whose treatment was purely medical and those that occurred far from home.

Using Epi info 7.3 software (Analysed by Epi info version 7.2.2.), we analysed the patients' socio-demographic, clinic and imaging data.

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## Ethics considerations

We obtained the parents' consent, and we respect the Helsinki principles.

## RESULTS

The incidence of DAs was above 50% in both groups of patients and fractures remain the first consequence of DA before and

**Table 1: Comparison of the socio-demographic data of the two groups of patients admitted for domestic accidents during our study period**

	Before lockdown (N=187 et n=106)	During lockdown (N=213 et n=127)
-	106 (56.68)	127 (59.62)
Age moyen	7.3 ans	7.2 ans
Sex		
Girl	36 (33.96)	44 (34.65)
Boy	70 (66.04)	83 (65.35)

N: Total number of patients hospitalised during the period, n: Total number of patients hospitalised as a result of a domestic accident

**Table 2: Comparison of clinical and imaging data of the two groups of patients admitted for domestic accidents during our study period**

	Before lockdown (N=187 et n=106)	During lockdown (N=213 et n=127)
Study period	20 March 2019 to 10 July 2019	20 March 2020 to 10 July 2020
Mechanism of trauma		
Fall from his height	19 (17.93)	27 (21.26)
Fall from a height ≥2 m	11 (10.38)	28 (22.04)
Staircase fall	6 (5.66)	13 (10.24)
Other falls*	13 (12.26)	17 (13.38)
Exposure to burn agent	14 (13.21)	23 (18.11)
Public highway accident	22 (20.75)	1 (0.79)
Door slam	4 (3.77)	13 (10.24)
Other mechanisms**	17 (16.04)	5 (3.94)
Consultation deadline (h)		
≤24	90 (84.90)	84 (66.14)
>24	16 (15.10)	43 (33.86)
Diagnostic		
Supracondylar fracture	26 (24.53)	50 (39.37)
Burn	14 (13.21)	26 (20.47)
Door finger	4 (3.77)	15 (11.81)
Forearm fracture	12 (11.32)	15 (11.81)
Femur fracture	23 (21.70)	6 (4.72)
Leg fracture	13 (12.26)	4 (3.14)
Deep skin wound	9 (8.50)	4 (3.14)
Foreign body	0	2 (1.58)
Compartment syndrome	0	2 (1.58)
Bite	4 (3.77)	2 (1.58)
Fracture of the pelvic	1 (0.94)	1 (0.80)

\*Other falls: Swing, from the back of an animal, from a chair, falls during sports, especially cycling and football, \*\*Other mechanisms: Animal bites, stabbings, ingestion of foreign bodies, knife and/or chopper wounds

during the lockdown, 70% and 59.84%, respectively. There was no significant difference in average age, and boys are significantly more affected [Table 1]. Before the lockdown, the most common mechanism encountered was accidents on the public highway 22 patients (20.75%); during the lockdown, this was represented by falls from a high place with a height > 2 m. Exposure to burning agents and door slamming injuries were more frequent during the lockdown, 18.11% versus 10.24%, respectively.

The other trauma mechanisms represented by animal bites, stabbings, ingestion of foreign bodies, knife and/or chopper wounds saw their incidence decrease significantly during the lockdown to 3.94% versus 16.04% before the lockdown. Forty-three patients (33.86%) were consulted after more than 24 h of the trauma during the lockdown.

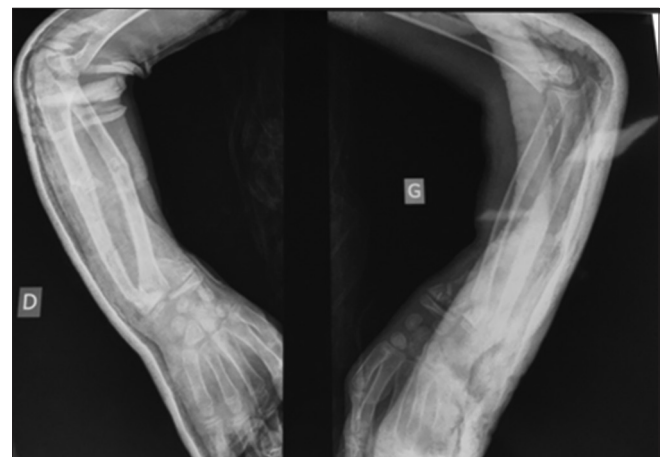
The supracondylar fracture remains the most common injury. Burns remain the second most common cause of DAs with a higher incidence during the lockdown (20.47%). Furthermore, the incidence of femur fractures requiring high-energy trauma decreased from 21.70% to 4.72% [Table 2].

Although there has been a re-organisation of the health services to adapt to the context of health emergencies, the COVID-19 lockdown has had no impact on patient's care. Patients were treated according to the service's protocol with good progress.

## DISCUSSION

Children at the age of 7 years and boys were more exposed to DAs before and during the lockdown.<sup>[5]</sup> It shows that the lockdown did not affect children's behaviour. At the age of 7 years, children are more turbulent, especially boys, and discover and try new types of games that exposed them to trauma. Al Rumhi *et al.*<sup>[6]</sup> consider that the male sex is a risk factor for the occurrence of DA ( $P < 0.001$ ).

The proportion of fracture decreased to 11% (70% versus. of the 59.84%). However, this result is very low compared



**Figure 1:** Standard X-ray of the right and left forearms showing bilateral fracture in an 11-year-old boy who fell riding his bicycle in the terrace

to those in literature where a decrease from 24% to 58% is reported.<sup>[7]</sup> In our study, parents reported that children continue to practice sport at home, drive bicycle [Figure 1] and play football.

In general, falls are the principal mechanism encountered during DAs. Falls from the height were up to 53.7% of DAs.<sup>[6]</sup>

It is alarming to note the sharp increase in the incidence of falls from a high place >2 m (twice the incidence before the lockdown) causing severe trauma. During the lockdown, balcony and rooftops give more space to play in but expose the children to more dangerous trauma such as fall from a high place.

Exposure to burning agents has also risen sharply, which can be explained by their permanent presence at home.

The consultation period has been negatively impacted by the lockdown.<sup>[3]</sup> This delay of consultation is probably due to the difficulties of travelling but also by parent's fear to visit hospital during this period of lockdown.

Data agree that the lockdown influenced the profile of DAs: the incidence increased and the mechanism of DAs remains the same. The incidence of burns and door fingers approached twice the before lockdown incidence and the incidence of fractures decreased.<sup>[5,8]</sup>

Fractures of the upper limbs were more frequent where the supracondylar fracture was the most frequent followed by the fracture of the distal ¼ radius and fracture of the forearm. These fractures required a low energy and are current in children.

In terms of management, the authors report a reduction of up to 24% in trauma interventions during confinement.<sup>[7]</sup>

During this period of lockdown, we observed exceptional mechanism of DA injuries. For example, an 11-year-old boy fall from the terrace riding his bicycle and got a bilateral fracture of the forearm [Figure 1].

We analysed the impact of the COVID-19 lockdown on the epidemiological and clinical profiles of DA and their management. The study did not include the DA leading to minor trauma which did not require admission, and we do not provide a detailed description of the management. However, we achieved our objectives.

## CONCLUSION

This study shows that the COVID-19 lockdown had influenced the epidemiological and clinical profiles of DAs in paediatric settings. While it has negatively impacted consultation time, it has considerably reduced the incidence of fractures.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understand that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

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